

Taking Every Step to Improve Survival from Cardiac Arrest



Anyone who has performed CPR knows that compressing the chest deeply and frequently enough to effectively circulate the blood is a daunting task. Yet efficient CPR is crucial for people who suffer cardiac arrest.

That's why Allina Hospitals & Clinics is evaluating the LUCAS™ Chest Compression System—with first responders, on ambulances, and in hospitals.

Machines Are Better at Chest Compressions

"A number of studies have proven that we humans do a lousy job of chest compressions. It's very, very hard to push hard and fast enough," says Dr. Charles Lick, medical director for Allina Medical Transportation (AMT), which provides advanced life support, basic life support, and scheduled transport in more than 75 Minnesota communities.

"It's very hard. You get tired out. You start leaning on the chest. It's very difficult to do well for a long period of time," he says. "That's why a machine that consistently compresses—100 times [a minute], 2-inches deep—will clearly in my mind be better than human CPR." The CPR-assist device is distributed by Physio-Control.

The LUCAS device is being tested by three hospital Emergency Departments, two first-responder agencies, and the ambulance service operated by Allina Hospitals & Clinics, a not-for-profit network of hospitals, clinics, and other healthcare services throughout Minnesota and western Wisconsin.

"It has been very well received by all our staff—first responders, paramedics, EMTs, and hospital nurses and physicians," he reports. "It's simple and easy to use, and it's small and compact."

Much Improved Circulation

In addition to highly effective chest compressions, the device prevents gaps that occur when healthcare professionals perform CPR in addition to administering shocks and medications and moving patients.

"There are a lot of gaps, a lot of time when no chest compressions are being delivered. Every time you stop, you go back to zero [blood circulation]," Lick notes. "The device doesn't stop, so you never go back to zero blood flow."

In a recent use, "A patient opened his eyes and started breathing during cardiac arrest with LUCAS operating," Lick says. "It clearly has demonstrated much improved circulation."

Lick calls LUCAS "one more step in our focus on improving survival in cardiac arrest. When LUCAS came out it was the next natural step for us to try out," he says, noting that Allina also has evaluated another company's chest-compression product.

In addition to the LUCAS CPR-assist device, Allina uses an impedance threshold device that increases negative pressure in the chest during the chest recoil phase of CPR. This creates a vacuum and pulls more blood into the heart, which causes more blood output with the next compression.

The ambulance service protocol calls for a minimum of 30 minutes of CPR. "We don't want to give up too early," says Lick. "We have learned from our colleagues in Europe that it can take a while to prime the pump and take a while to get the patient back."

Impacting Care on a Broad Scale

As medical director of Allina Medical Transportation, Lick is responsible for all clinical care provided by ambulance personnel. He also serves as medical director of the Emergency/Urgent Care department at Allina's Buffalo Hospital.

"A number of studies have proven that we humans do a lousy job of chest compressions."

"What's rewarding to me is being able to impact a lot of patients and making a difference," says Lick, who has been AMT's medical director for seven years. "Our ambulance service gets 58,000 calls a year, and does 38,000 transports." Compared to hospital work, he finds, EMS "is a way to impact and improve care on a much broader scale."

Allina's focused efforts are paying off. Of 154 resuscitation attempts in cardiac arrest cases in the first six months of 2007, 43 percent had a return of spontaneous circulation and 14 percent survived neurologically intact, compared to a national average survival rate of about 5 percent for sudden cardiac arrest, Lick says.

Allina has been a Physio-Control customer for more than 20 years. "The design and ease of use of their products and the company's good reputation" are reasons he cites for Allina's long-standing relationship with Physio-Control.